CLAIMS

1. An image processing apparatus comprising:

storage means for storing image data;

refresh means for performing a refresh operation for refreshing said storage means within a predetermined time period;

first and second process means for respectively performing their predetermined processes by using said storage means; and

arbitrating means for performing arbitration to cause said first process means to perform the predetermined process as a priority over the refresh operation and to cause said second process means to perform the predetermined process while allowing the refresh operation to be performed as a priority over the predetermined process.

2. An image processing apparatus according to claim 1, wherein said first process means includes at least one of image pickup means for storing picked-up image data in said storage means and display means for displaying the image date stored in said storage means.

3. An image processing apparatus according to claim 1, wherein said second process means includes at least one of compressing/expanding means for compressing/expanding the image data, adding means for adding together vertical adjacent data of the image data, and processing means for

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processing the image data.

4. An image processing apparatus according to claim 1, wherein said arbitrating means causes said refresh means to perform the refresh operation during a blanking period of the picked-up image data or the image data to be displayed.

5. An image processing apparatus according to claim 1, wherein said first process means includes display means for displaying the image date stored in said storage means, and, while said second process means is operating, allows the refresh operation to be performed on the basis of a refresh request from said refresh means during a blanking period of the image data to be displayed.

6. An image processing apparatus according to claim 1, further comprising control means for controlling another operation of said image processing apparatus, a control program for said control means being stored in said storage means, said control means accessing said storage means during an idle time period other than a time period during which any of said refresh means and said first and second process means accesses said storage means.

7. An image processing apparatus according to claim 1, wherein said arbitrating means includes counting means for counting up to a predetermined number, said counting means being arranged to increment a count value by one

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within the predetermined time period and, each time the refresh operation is performed once, decrement the count value by one, said refresh means performing the refresh operation when the count value is not less than 1.

8. A computer-readable recording medium in which is stored a program for executing:

a storage process for storing image data in storage means;

a refresh process for performing a refresh operation for refreshing the storage means within a predetermined time period;

a first process for performing a predetermined process as a priority over the refresh operation by using the storage means; and

a second process for performing a predetermined process while allowing the refresh operation to be performed as a priority over the predetermined process.

9. A recording medium according to claim 8, wherein said first process includes at least one of an image pickup process for storing picked-up image data in the storage means and a display process for displaying the image date stored in the storage means.

10. A recording medium according to claim 9, wherein said second process includes at least one of a compressing/expanding for compressing/expanding the image

data, an adding process for adding together vertical adjacent data of the image data, and a processing process for processing the image data.

11. A recording medium according to claim 9, wherein said refresh process is performed during a blanking period of the picked-up image data or the image data to be displayed.

12. A recording medium according to claim 8, wherein said first process includes a display process for displaying the image date stored in the storage means, and, while said second process is operating, allows the refresh operation to be performed on the basis of a refresh request during a blanking period of the image data to be displayed.

13. An image processing apparatus comprising:
     storage means for storing image data;
     refresh means for refreshing said storage means;
     a plurality of process means each of which performs writing of image data into said storage means or reading of image data from said storage means; and
     arbitrating means for arbitrating operations of said plurality of process means and an operation of said refresh means.

14. An image processing apparatus according to claim 13, wherein said arbitrating means specifies whether to

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synchronize the operation of said refresh means with image
data, according to the kind of process executed by each of
said plurality of process means.

15. An image processing apparatus according to claim
14, wherein said arbitrating means synchronizes the
operation of said refresh means with a horizontal
synchronizing signal of the image data while particular
process means among said plurality of process means is
operating, said particular process means being arranged to
perform an image input process or an image output process.

16. An image processing apparatus according to claim
15, wherein said arbitrating means sets a period of the
operation of said refresh means to a predetermined period
determined on the basis of a characteristic of said storage
means while particular process means among said plurality of
process means is operating, said particular process means
being arranged to perform an image processing process or an
image compressing process.

17. An image processing apparatus according to claim
13, further comprising control means for exerting system
control over said image processing apparatus by using said
storage means, said control means being operated during a
transition from a state in which said refresh means operates
to a state in which said plurality of process means operate.

18. An image processing apparatus comprising:

storage means for storing image data;

refresh means for refreshing said storage means;

process means for writing image data into said storage means or reading image data from said storage means; and

control means for controlling another operation of said image processing apparatus by using said storage means,

wherein said control means is operated during a transition from a state in which said refresh means operates to a state in which said process means operates.

19. An image processing apparatus according to claim 18, wherein said process means is arranged to perform an image input process or an image output process, and said refresh means is arranged to operate during a horizontal blanking period of image data.

20. An image processing apparatus comprising:

storage means for storing image data;

refresh means for refreshing said storage means; and

a plurality of process means each of which performs writing of image data into said storage means or reading of image data from said storage means,

wherein a period of an operation of said refresh means is switched according to the kind of process executed by process means which is operating, among said plurality of

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process means.

21. An image processing apparatus according to claim 20, wherein the operation of said refresh means is synchronized with a horizontal synchronizing signal of the image data if the process executed by said process means is an image input process or an image output process.

22. An image processing apparatus according to claim 21, wherein a period of the operation of said refresh means is set to a predetermined period determined on the basis of a characteristic of said storage means if the process executed by said process means is an image processing process or an image compressing process.

23. An image processing apparatus comprising:

storage means for storing image data;

refresh means for refreshing said storage means;
and

process means for performing writing of image data into said storage means or reading of image data from said storage means,

wherein said refresh means is operated during only a blanking period selected from among blanking periods of a synchronizing signal of said image data.

24. An image processing apparatus according to claim 23, wherein an average refresh period of said refresh means

is set to a period determined on the basis of a characteristic of said storage means.

25. An image processing apparatus comprising:

(a) storage means for storing image data;

(b) refresh means for refreshing said storage means;

(c) a plurality of process means each of which performs writing of image data into said storage means or reading of image data from said storage means;

(d) control means for controlling another operation by using said storage means; and

(e) arbitrating means for arbitrating access to said storage means so that a period during which to operate said control means and a period during which to operate process means which is operating, among said plurality of process means, is relatively switched therebetween, according to the kind of process means which is operating.

26. An apparatus according to claim 25, wherein said arbitrating means causes said refresh means to perform a predetermined operation, and disables processes of said plurality of process means for a predetermined time period and causes said control means to operate until the end of the predetermined time period after the completion of the predetermined operation of said refresh means.

27. An apparatus according to claim 26, wherein the predetermined time period is determined according to each of

said plurality of process means.

28. An apparatus according to claim 27, wherein each of said plurality of process means has a register for holding a value which corresponds to the predetermined time period, said control means being capable of rewriting said register.

29. An apparatus according to claim 28, wherein said plurality of process means include first process means for reading image data stored in said storage means, in order to display the image data, and a plurality of second process means for varying said image data into different forms, respectively, said arbitrating means being arranged to relatively switch, according to the kind of second process means which is operating, among said plurality of second process means, a period during which to operate said control means and a period during which to operate said second process means which is operating, during a blanking period of image data displayed by said first process means.

30. An image processing method comprising steps of:

(a) performing a refresh process on storage means which stores image data;

(b) performing a first process by using the storage means;

(c) performing a second process by using the storage means; and

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(d) arbitrating access to the storage means in such a manner that the first process takes priority over the refresh process and the refresh process takes priority over the second process.

31. An image processing method comprising steps of:

(a) performing a refresh process on storage means which stores image data;

(b) processing image data by performing writing of the image data into the storage means or reading of the image data from the storage means; and

(c) specifying whether to synchronize the refresh process with an image, according to a process content of said image processing step.

32. A computer-readable recording medium in which is stored a program for executing:

a step of performing a refresh process on storage means which stores image data;

a step of processing image data by performing writing of the image data into the storage means or reading of the image data from the storage means; and

a step of specifying whether to synchronize the refresh process with an image, according to a process content of said image processing step.

33. An image processing method comprising steps of:

(a) performing a refresh process on storage means

which stores image data;

(b) processing image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

(c) controlling another operation by using the storage means; and

(d) executing said control step during switching from said refresh process step to said image data processing step.

34. A computer-readable recording medium in which is stored a program for executing:

a step of performing a refresh process on storage means which stores image data;

a step of processing image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

a step of controlling another operation by using the storage means; and

a step of executing said control step during switching from said refresh process step to said image data processing step.

35. An image processing method comprising steps of:

(a) performing a refresh process on storage means which stores image data;

(b) applying a first process to image data by performing writing of the image data into the storage means

or reading of the image data from the storage means;

(c) applying a second process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means; and

(d) switching a period of the refresh process between when the first process is performed and when the second process is performed.

36. A computer-readable recording medium in which is stored a program for executing:

a step of performing a refresh process on storage means which stores image data;

a step of applying a first process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

a step of applying a second process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means; and

a step of switching a period of the refresh process between when the first process is performed and when the second process is performed.

37. An image processing method comprising steps of:

(a) performing a refresh process on storage means which stores image data;

(b) applying a process to image data by performing writing of the image data into the storage means or reading

of the image data from the storage means; and

(c) performing the refresh process during only a blanking period selected from among blanking periods of an image signal indicative of the image data.

38. A computer-readable recording medium in which is stored a program for executing:

a step of performing a refresh process on storage means which stores image data;

a step of applying a process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means; and

a step of performing the refresh process during only a blanking period selected from among blanking periods of an image signal indicative of the image data.

39. An image processing method comprising steps of:

(a) performing a refresh process on storage means which stores image data;

(b) applying a first process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

(c) applying a second process different from the first process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

(d) controlling another operation of an image processing apparatus by the storage means; and

(e) relatively switching a time period during which to control said other operation and a time period during which to execute the first or second process, according to whether the first process or the second process is being performed.

40. A computer-readable recording medium in which is stored a program for executing:

a step of performing a refresh process on storage means which stores image data;

a step of applying a first process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

a step of applying a second process different from the first process to image data by performing writing of the image data into the storage means or reading of the image data from the storage means;

a step of controlling another operation of an image processing apparatus by the storage means; and

a step of relatively switching a time period during which to control said other operation and a time period during which to execute the first or second process, according to whether the first process or the second process is being performed.

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